

## CLAIMS

1. A method for semiconductor wafer processing, comprising:  
providing fluid to a proximity head;  
5 heating the fluid within the proximity head; and  
delivering the heated fluid to a surface of a semiconductor wafer for use in a  
wafer processing operation.

2. The method of claim 1, wherein the wafer processing operation is a  
10 cleaning operation.

3. The method of claim 1, wherein the wafer processing operation is an  
etching operation.

15 4. The method of claim 1, wherein the wafer processing operation is a plating  
operation.

5. The method of claim 2, wherein the fluid used in the cleaning operation is  
one of a cleaning chemistry and deionized water (DIW).

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6. The method of claim 3, wherein the fluid used in the etching operation is an  
etching chemistry.

7. The method of claim 1, wherein the heating of the fluid within the proximity head further includes:

controlling a temperature of the fluid within the proximity head.

5           8. The method of claim 7, wherein the controlling of the temperature of the fluid within the proximity head further includes:

monitoring the temperature of the fluid within the proximity head; and

adjusting the heating of the fluid to maintain the temperature of the fluid at a desired temperature.

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9. The method of claim 1, further including:

removing the heated fluid from the surface of the semiconductor wafer.

10. A proximity head for semiconductor wafer processing, comprising:

15           a heating portion configured to raise a temperature of a fluid flowing therethrough;

a sensor disposed within the proximity head for measuring the temperature of the fluid flowing through the heating portion;

20           a channel disposed in the heating portion, the channel being configured to guide the fluid through the heating portion; and

a bottom surface having at least one outlet port and at least one inlet port, the at least one outlet port being in flow communication with the channel disposed in the heating portion.

11. The proximity head of claim 10, wherein the heating portion is comprised of silicon carbide and is coupled to a power source.

12. The proximity head of claim 10, wherein the heating portion is comprised  
5 of an insulating material having an electrically conductive material dispersed therein,  
the electrically conductive material being coupled to a power source.

13. The proximity head of claim 12, wherein the insulating material is comprised of a ceramic material.

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14. The proximity head of claim 12, wherein the electrically conductive material comprises a wire.

15. The proximity head of claim 10, wherein the channel in the heating  
15 portion is a first channel having a first flow path and the heating portion further  
includes a second channel having a second flow path, wherein the first flow path and  
the second flow are separate.

16. The proximity head of claim 10, wherein the sensor is coupled to a  
20 controller, the controller being configured to control the temperature of the fluid in the  
heating portion.

17. A semiconductor wafer processing system, comprising:

a fluid source;

a proximity head in flow communication with the fluid source, the proximity head including:

5                   a heating portion configured to raise a temperature of a fluid flowing therethrough,

a sensor disposed within the proximity head for measuring the temperature of the fluid flowing through the heating portion,

10                  a channel disposed in the heating portion, the channel being configured to guide the fluid through the heating portion, and

a bottom surface having at least one outlet port and at least one inlet port, the at least one outlet port being in flow communication with the channel disposed in the heating portion;

15                  a first member coupled to the proximity head, the first member being configured to manipulate the proximity head; and

a second member configured to support a wafer, the second member being capable of placing the semiconductor wafer proximate to the bottom surface of the proximity head.

20                  18. The semiconductor wafer processing system of claim 17, wherein the heating portion is comprised of silicon carbide and is coupled to a power source.

19. The semiconductor wafer processing system of claim 17, wherein the heating portion is comprised of an insulating material having an electrically conductive material dispersed therein, the electrically conductive material being coupled to a power source.

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20. The semiconductor wafer processing system of claim 17, wherein the channel in the heating portion is a first channel having a first flow path and the heating portion further includes a second channel having a second flow path, wherein the first flow path and the second flow are separate.

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21. The semiconductor wafer processing system of claim 17, wherein the sensor is coupled to a controller, the controller being configured to control the temperature of the fluid in the heating portion.

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